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Exercise - I (Conceptual Questions) Build Up Your Understanding

1. The population of an insect species shows an explosive increase in numbers during rainy season followed by its disappearance at the end of the season. What does this show ?
(1) The population of its predators increases enormously
(2) S-shaped or sigmoid growth of this insect
(3) The food plants mature and die at the end of the rainy season.
(4) Its population growth curve is of J-type

2. The formula for exponential population growth is -
(1) $\frac{dt}{dN} = rN$ (2) $\frac{dN}{rN} = dt$
(3) $\frac{rN}{dN} = dt$ (4) $\frac{dN}{dt} = rN$

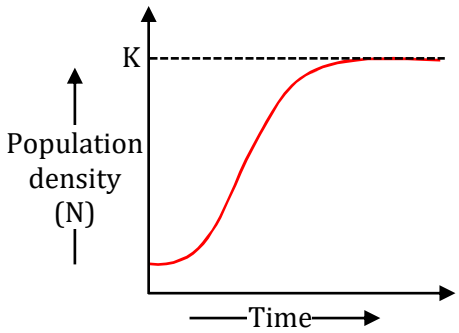
3. Regarding life history variations. Which among the following is incorrect ?
(1) Breeding once in life time — Bamboo
(2) Breeding many times in life time — Birds
(3) Production in large number of small size offspring — Mammals
(4) Production in small number of large size offspring — Birds

4. $\frac{dN}{dt} = rN\left(\frac{K-N}{N}\right)$
In above equation $\left(\frac{K-N}{N}\right)$ represent :-
(1) Carrying capacity
(2) Environmental resistance
(3) Rate of change in population density
(4) Instrinsic rate of growth

5. In a pond there are 400 lotus plant last year, through reproduction 16 new lotus plants are added, taking the current population to 416, then calculate the birth rate.
(1) 0.4 offspring per year
(2) 0.6 offspring per year
(3) 0.08 offspring per year
(4) 0.04 offspring per year

6. A country has a high number of reproductive individual than pre-reproductive individual, what is correct about the population ?
(1) Population is expanding
(2) Population is declining
(3) Population is stable
(4) Cannot be predicted

7. In a logistic growth curve of population, environmental resistance is maximum when :



(1) value of 'r' is high
(2) value of 'r' is low
(3) N approaches K
(4) K approaches N

8. A group of individuals of same species constitute :
(1) Organism (2) Community
(3) Biome (4) Population

9. Which of the following sequences is correct according to ecological hierarchy :-
(1) Population, variety, community, ecosystem
(2) Population, community, ecosystem, Biome
(3) Population, community, species, ecosystem
(4) Species, variety, ecosystem, population

10. Properties of populations are not present in the __"A"__ but arise as a result of interactions among the __"B"__ comprising the population. "A" and "B" are :-
(1) Organisms and ecosystems
(2) Biomes and organisms
(3) Organism and organisms
(4) Ecosystems and communities.

11. Fill in the blank.
A ..... is a unit of land with a natural boundary having a mosaic of patches. There patches generally represent different .....
(1) Biome, Landscape
(2) Biome, Ecosystem
(3) Landscape, Ecosystem
(4) Landscape, Biome

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12. Which of the following is the key element that lead to so much variation in the physical and chemical conditions of different habitats :-
(1) Light and temperature
(2) Water availability
(3) Soil condition
(4) All of these

13. Which of the following is responsible for the formation of biomes?
(1) Annual variation in intensity of temperature
(2) Annual variation in duration of temperature
(3) Annual variation in precipitation
(4) All of the above

14. In ecological hierarchy the abiotic factors are first time included at which hierarchical level
(1) Community Level
(2) Population Level
(3) Ecosystem Level
(4) Landscape Level

15. Biosphere is :
(1) a component in the ecosystem
(2) composed of the plants present in the soil
(3) life in the outer space
(4) composed of all living organisms present on earth which interact with the physical environment

16. The species which establishes an essential link with other species to help the later in some vital activity, is called :-
(1) Critical link species
(2) Key stone species
(3) Endemic species
(4) Ecophene

17. Species which play, a vital role in controlling the relative abundance of other species, and control functioning of the community is called
(1) Dominant species
(2) Key stone species
(3) Link species
(4) Network species

18. Kangaroo rat in desert is an example of ?
(1) Endemic species
(2) Key stone species
(3) Critical link species
(4) None of these

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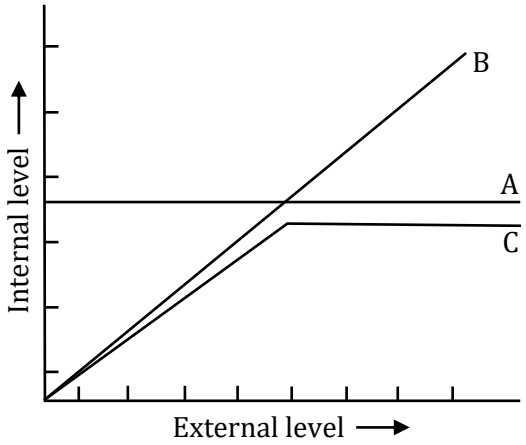
19. Which of the following is not an example of endemic species ?
(1) Fig tree (2) Kangaroo
(3) Kiwi (4) *Metasequoia*

20. Mycorrhizal association is
(1) Mutualism (2) Commensalism
(3) Parasitism (4) Exploitation

21. In general, species diversity ____ as we move away from the equator towards the poles
(1) Increases
(2) Decrease
(3) Constant
(4) Can not say anything

22. Which of the following is not a characteristics of a community ?
(1) Dominance (2) Species diversity
(3) Natality (4) Stratification

23. The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do A, B and C represent respectively?



(1) A: Conformer, B: Regulator, C: Partial regulator
(2) A: Regulator, B: Partial, C: Conformer regulator
(3) A: Partial, B: Regulator, C: Conformer regulator
(4) A: Regulator, B: Conformer, C: Partial regulator

24. Which one of the following is functional characteristics of ecosystem ?
(1) Stratification
(2) Productivity
(3) Species dominancy
(4) Species diversity

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25. Which of the following characters are changed with altitude and latitude?
(a) Temperature
(b) Rain fall
(c) Vegetation
(d) Species diversity
(1) only b (2) only a and b
(3) only a, b and c (4) a, b, c & d

26. The group of organisms of different species forms a
(1) Community (2) Population
(3) Ecosystem (4) Biome

27. Organisms which breed only once in their life is :-
(1) Pacific Salmon fish (2) Pacific Tuna fish
(3) Pacific Shark (4) Pacific Oysters

28. Sexual deceit is exhibited by :
(1) Yucca plant (2) *Ophrys* plant
(3) Wasp species (4) Fig Tree

29. Which of the following is an example of co–evolution?
(1) Barnacle & Whale
(2) Clown fish & Sea Anemone
(3) Hermit crab & Sea Anemone
(4) Bees & orchid flower

30. A relationship between algae & fungi is an example of:
(1) Commensalism
(2) Protocooperation
(3) Mutualism
(4) Parasitism

31. Lichens are the associations of
(1) Protist and fungus
(2) Algae and bacterium
(3) Fungus and algae
(4) Fungus and virus

32. Which one of the following population interaction is (+, +) type :
(1) Commensalism (2) Mutualism
(3) Parasitism (4) Amensalism

33. A wasp pollinating a fig flower is an example of:
(1) Commensalism
(2) Protocooperation
(3) Mutualism
(4) Parasitism

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34. Which one of the following interactions share a characteristic where none of the organism can complete its life cycle without the other participating organism?
(1) *E.coli* and Human
(2) Cattle egret bird and Cattle
(3) Hermit Crab and Sea Anemone
(4) Yucca and Pronuba

35. Which of the following species relation is not an example of detrimental relation?
(1) Viscum – Oak
(2) Sparrow – Seed
(3) Loranthus-Mango
(4) Fig tree – Wasp

36. They may reduce the survival, growth and reproduction of the other organism and reduce its population density, they might render the organism more vulnerable to predation by making it physically weak. They are:
(1) Predator
(2) Parasites
(3) Ammensals
(4) Commensal

37. Animals eating plants are categorised separately as herbivores, they are in a broad ecological context not very different from:
(1) Parasite
(2) Predator
(3) Commensal
(4) Amensal

38. Which statement is true for Connell's elegant field experiment?
(1) Performed on prickly pear cactus
(2) Shows resource partitioning
(3) Was perform in rocky intertidal area of Scotland
(4) Was done on Pisaster

39. The prickly pear cactus in the early 1920 introduced into :-
(1) American pacific cost
(2) Rocky sea coasts of Scotland
(3) Galapagos islands
(4) Australia

40. Which of the following concept is correct about amensalism?
(1) Both species are benefitted
(2) One species is benefitted and the other is neither benefitted nor harmed
(3) One species is harmed whereas the other is unaffected
(4) One species is benefitted and the other is harmed

41. Endemic plants -
(1) Cosmopolitan
(2) Occur in a particular area
(3) Occur at high altitudes
(4) Occur on north pole

42. Increase of population under optimum condition is termed.
(1) Reproductive ability
(2) Secondary production
(3) Biotic potential
(4) Biomass

43. Occurrence of endemic species in South America and Australia due to :-
(1) These species has been extinct from other regions
(2) Continental separation
(3) There is no terrestrial route to these places
(4) Retrogressive evolution

44. In a population unrestricted reproductive capacity is called as :
(1) Biotic potential (2) Fertility
(3) Carrying capacity (4) Birth rate

45. What is true for individuals of same species :
(1) Live in same niche
(2) Live in same habitat
(3) Interbreeding
(4) Live in different habitat

46. When the two ecosystems overlap each other the area is called.
(1) Ecotone (2) Niche
(3) Edge effect (4) Ecotypes

47. The community which starts succession at a place is termed
(1) Climax community
(2) Seral community
(3) Pioneer community
(4) Primary community

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48. Earliest settlers on barren lands or the farmers of nature are-
(1) Diatoms (2) Lichens
(3) Moss & grasses (4) Ferns

49. In plant succession last community is called :
(1) Ecotone
(2) Climax community
(3) Seral community
(4) Ecosystem

50. Group of two or more than two plant species is called as :-
(1) Plant community
(2) Animal ecosystem
(3) Plant ecosystem
(4) Ecological niche

51. Stable plant community formed during succession is called -
(1) Sere community
(2) Climax community
(3) Dominant community
(4) Ecotone

52. Succession in a water body leads to the formation of :-
(1) Mesophytic vegetation
(2) Xerophytic vegetation
(3) Halophytic vegetation
(4) Epiphytic vegetation

53. Competition for food, light and space is most severe in -
(1) Closely related species growing in the same area (in the same niche)
(2) Closely related species growing in different habitat
(3) Distantly related species growing in the same habitat
(4) Distantly related species growing in different habitat

54. Most successful parasites are those which do not
(1) Grow free
(2) Kill their host
(3) Reproduce sexually
(4) Survive in soil

55. The basic unit of ecological study is :-
(1) species (2) organism
(3) community (4) biosphere

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56. Mycorrhizae relationship between fungi and roots of higher plants is ?
(1) Parasitic relationship
(2) Saprophytic relationship
(3) Symbiotic relationship
(4) Epiphytic relationship

57. Parasites adversely affect :-
(1) Survival of host.
(2) Growth of host.
(3) Reproduction potential of host.
(4) All of the above

58. Identify the correct match :-

Column – I		Column – II	
(i)	Species diversity	(a)	Great influence on community stability
(ii)	Species dominance	(b)	Zonation according to the need of light
(iii)	Stratification	(c)	Different types of species in a community
(iv)	Keystone species	(d)	Highest number of one type of species

(1) i–c, ii–b, iii–a, iv–d
(2) i–c, ii–d, iii–b, iv–a
(3) i–b, ii–a, iii–d, iv–c
(4) i–b, ii–d, iii–a, iv–c

59. The given diagram is related to which stage of succession?

(1) Pioneer community
(2) Reed swamp stage
(3) Submerged plant stage
(4) Submerged free floating plant stage

60. The group of organisms of different species form a :-
(1) Community
(2) Population
(3) Ecosystem
(4) Biome

61. Consider the following statements and select the option which includes all the correct ones only:-
(a) Succession is parallel with the changes in the physical environment.
(b) As succession proceeds, the number and types of animals and decomposers also change.
(c) Littoral zone has high diversity.
(d) Key stone species are abundantly found in a community.
(1) a, b and d (2) b, c and d
(3) a, c and d (4) a, b and c

62. Which of the following is an epiphyte ?
(1) Orchid (2) Lianas
(3) Santalum (4) Mango

63. The correct statement for parasites is/are :-
(a) Host specific parasites & hosts tend to co-evolve
(b) Parasites have highly developed sense organs
(c) Parasites may reduce population density of host
(d) Parasites have highly developed digestive system
(1) a and b (2) b and c
(3) a and c (4) a and d

64. In an ecosystem :-
(1) Primary producers are more than primary consumers
(2) Primary consumers are always larger than primary producers
(3) Secondary consumers are always larger than primary producers
(4) Primary consumers are least depend on primary producers

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EXERCISE-I (Conceptual Questions)															ANSWER KEY
Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	4	3	2	4	2	3	4	2	3	3	4	4	3	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	2	2	1	1	2	3	4	2	4	1	1	2	4	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	3	2	3	4	4	2	2	3	4	3	2	3	2	1	3
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	3	2	2	1	2	1	1	2	2	3	4	2	2	1
Question	61	62	63	64											
Answer	4	1	3	1											

SOLUTION

5. Given : No. of lotus plants in last year = 400

No. of lotus plants in current year = 416

No. of new lotus plants = 16

$$\text{Birth rate} = \frac{\text{No. of birth in an year}}{\text{No. of individuals initial Population}}$$

$$= \frac{16}{400} = 0.04 \text{ offspring/year.}$$

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Niche overlap indicates
(1) sharing of one or more resources between the two species
(2) mutualism between two species
(3) active cooperation between two species
(4) two different parasites on the same host

AIPMT 2007

2. Which one of the following ecosystem types has the highest annual net primary productivity
(1) Temperate deciduous forest
(2) Tropical rain forest
(3) Tropical deciduous forest
(4) Temperate evergreen forest

3. A high density of elephant population in an area can result in :-
(1) Predation on one another
(2) Mutualism
(3) Intra specific competition
(4) Inter specific competition

4. Geometric representation of age structure is a characteristic of :-
(1) Ecosystem (2) Biotic community
(3) Population (4) Landscape

AIPMT 2008

5. Quercus species are the dominant component in :-
(1) Scrub forests
(2) Tropical rain forests
(3) Temperate deciduous forests
(4) Alpine forests

6. The table below gives the populations (in thousands) of ten species (A – J) in four areas (a – d) consisting of the number of habitats given within brackets against each. Study the table and answer the question which follows :-

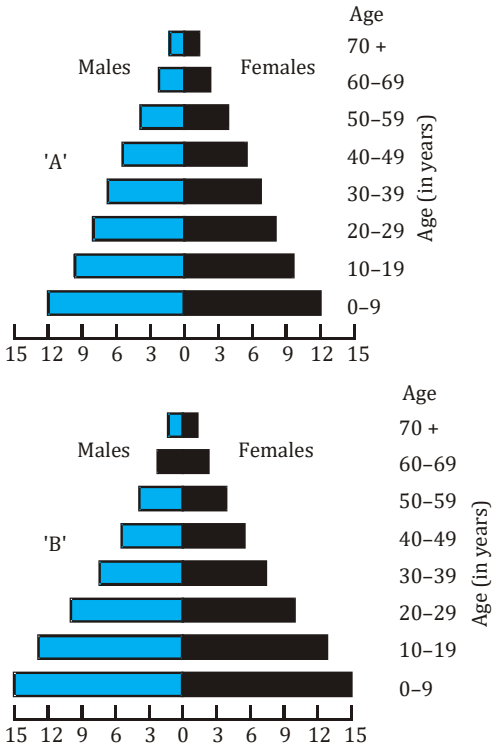
Area and Number of habitats	Species and their populations (in thousands) in the areas									
	A	B	C	D	E	F	G	H	I	J
a (11)	2.3	1.2	0.52	6	-	3.1	1.1	9	-	10.3
b (11)	10.2	-	0.62	-	1.5	3	-	8.2	1.1	11.2
c (13)	11.3	0.9	0.48	2.4	1.4	4.2	0.8	8.4	2.2	4.1
d (12)	3.2	10.2	11.1	4.8	0.4	3.3	0.8	7.3	11.3	2.1

Which area out of a to d shows maximum species diversity ?
(1) d (2) a
(3) b (4) c

AIPMT 2009

7. Reduction in vascular tissue, mechanical tissue and cuticle is characteristic of :-
(1) Hydrophytes (2) Xerophytes
(3) Mesophytes (4) Epiphytes

8. A country with a high rate of population growth took measures to reduce it. The figure below shows age-sex pyramids of populations A and B twenty years apart. Select the correct interpretation about them:



(1) "A" is the earlier pyramid and no change has occurred in the growth rate
(2) "A" is more recent and shows slight reduction in the growth rate
(3) "B" is the earlier pyramid and shows stabilised growth rate
(4) "B" is more recent showing that population is very young

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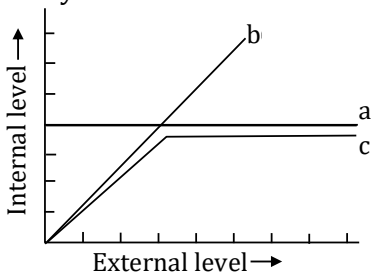
AIPMT 2010

9. Which one of the following is one of the characteristics of a biological community ?
(1) Sex-ratio (2) Stratification
(3) Natality (4) Mortality

10. Study the four statements (a-d) given below and select the two correct ones out of them
(a) A lion eating a deer and a sparrow feeding on grain are ecologically similar in being consumers
(b) Predator star fish Pisaster helps in maintaining species diversity of some invertebrates
(c) Predators ultimately lead to the extinction of prey species
(d) Production of chemicals such as nicotine, strychnine by the plants are metabolic disorders
The two correct statements are :
(1) (a) and (b) (2) (b) and (c)
(3) (c) and (d) (4) (a) and (d)

11. The figure given below is a diagrammatic representation of response of organisms to abiotic factors. What do a, b and c represent respectively?



	(a)	(b)	(c)
(1)	regulator	conformer	partial regulator
(2)	conformer	regulator	partial regulator
(3)	regulator	partial regulator	conformer
(4)	partial regulator	regulator	conformer

12. Which one of the following is a xerophytic plant in which the stem is modified into a flat, green and succulent structure?
(1) Casuarina (2) Hydrilla
(3) Acacia (4) Opuntia

13. Which one of the following is most appropriately defined?
(1) Amensalism is a relationship in which one species is benefited where as the other is unaffected.
(2) Predator is an organism that catches and kills other organism for food.
(3) Parasite is an organism which always lives inside the body of other organism and may kill it.
(4) Host is an organism which provides food to another organism.

AIPMT 2011

14. Large Woody Vines are more commonly found in
(1) Temperate forests
(2) Mangroves
(3) Tropical rainforests
(4) Alpine forests

15. Consider the following four conditions (a - d) and select the correct pair of them as adaptation to environment in desert lizards.
The conditions :-
(a) Burrowing in soil to escape high temperature
(b) Losing heat rapidly from the body during high temperature
(c) Bask in sun when temperature is low
(d) Insulating body due to thick fatty dermis
Options :
(1) (c), (d) (2) (a), (c)
(3) (b), (d) (4) (a), (b)

16. Which one of the following is categorised as a parasite in true sense?
(1) The female Anopheles bites and sucks blood from humans.
(2) Human foetus developing inside the uterus draws nourishment from the mother.
(3) Head louse living on the human scalp as well as laying eggs on human hair.
(4) The cuckoo (koel) lays its eggs in crow's nest.

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17. Consider the following statements (A)-(D) each with one or two blanks.

(A) Bears go into .....(1) ..... during winter to .....(2) ..... cold weather

(B) A conical age pyramid with a broad base represents ....(3)..... human population.

(C) A wasp pollinating a fig flower is an example of .....(4).....

(D) An area with high levels of species richness is known as .....(5).....

Which one of the following options, gives the correct fill ups for the respective blank numbers from (1) to (5) in the statements?

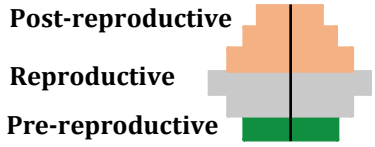
(1) (1) - hibernation, (2) - escape, (3) - expanding, (5) - hot spot,

(2) (3) - stable (4) - commensalism, (5) - marsh

(3) (1) - aestivation, (2) - escape, (3) - stable, (4) mutualism

(4) (3) - expanding, (4) commensalism, (5) - biodiversity park

18. What type of human population is represented by the following age pyramid?



(1) Vanishing population

(2) Stable population

(3) declining population

(4) Expanding population

19. The logistic population growth is expressed by the equation :

(1) $\frac{dN}{dt} = rN\left(\frac{N-K}{N}\right)$ (2) $\frac{dt}{dN} = rN\left(\frac{K-N}{K}\right)$

(3) $\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$ (4) $\frac{dN}{dt} = rN$

AIPMT 2012

20. People who have migrated from the planes to an area adjoining Rohtang pass about six months back:

(1) suffer from altitude sickness with symptoms like nausea, fatigue, etc.

(2) have the usual RBC count but their haemoglobin has very high binding affinity to O_2

(3) have more RBCs and their haemoglobin has a lower binding affinity to O_2

(4) are not physically fit to play games like football.

21. *Cuscuta* is an example of :-

(1) Predation (2) Endoparasitism

(3) Ectoparasitism (4) Brood parasitism

AIPMT 2013

22. A sedentary sea anemone gets attached to the shell lining of hermit crab. The association is :

(1) Amensalism (2) Ectoparasitism

(3) Symboisis (4) Commensalism

AIPMT 2015

23. Most animals are tree dwellers in a:-

(1) Thorn woodland

(2) Temperate deciduous forest

(3) Tropical rain forest

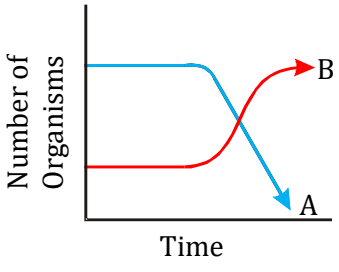
(4) Coniferous forest

24. Vertical distribution of different species occupying different levels in a biotic community is known as:

(1) Stratification (2) Zonation

(3) Pyramid (4) Divergence

25. The following graph depicts changes in two populations (A and B) of herbivores in a grassy field A possible reason for these changes is that:



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(1) Population B competed more successfully for food than population A
(2) Population A produced more offspring than population B
(3) Population A consumed the members of population B
(4) Both plant populations in this habitat decreased

26. In which of the following interactions both partners are adversely affected ?
(1) Mutualism (2) Competition
(3) Predation (4) Parasitism

NEET-I 2016

27. When does the growth rate of a population following the logistic model equal zero? The logistic model is given as $\frac{dN}{dt} = rN\left(1 - \frac{N}{K}\right)$:-
(1) when N/K is exactly one.
(2) when N nears the carrying capacity of the habitat.
(3) when N/K equals zero.
(4) when death rate is greater than birth rate.

28. Gause's principle of competitive exclusion states that :
(1) More abundant species will exclude the less abundant species through competition.
(2) Competition for the same resources excludes species having different food preferences.
(3) No two species can occupy the same niche indefinitely for the same limiting resources.
(4) Larger organisms exclude smaller ones through competition.

29. Which of the following would appear as the pioneer organisms on bare rocks?
(1) Lichens (2) Liverworts
(3) Mosses (4) Green algae

NEET-II 2016

30. The principle of competitive exclusion was stated by :-
(1) MacArthur
(2) Verhulst and Pearl
(3) C. Darwin
(4) G.F. Gause

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NEET-UG 2017

31. Asymptote in a logistic growth curve is obtained when:
(1) K = N
(2) K > N
(3) K < N
(4) The value of 'r' approaches zero

32. Presence of plants arranged into well defined vertical layers depending on their height can be seen best in:
(1) Tropical Rain Forest
(2) Grassland
(3) Temperate Forest
(4) Tropical Savannah

33. Mycorrhiza are the example of :
(1) Amensalism
(2) Antibiosis
(3) Mutualism
(4) Fungistasis

34. In a hypothetical population of 100 individual having 'r' = 0.5/female/year, what will be the population size in 6 years (with e = 2.72) showing exponential rate of growth ?
(1) 1218 (2) 739
(3) 2012 (4) 448

NEET-UG 2018

35. Niche is
(1) all the biological factors in the organism environment
(2) the physical space where an organism live
(3) the range of temperature that the organism needs to live
(4) the functional role played by the organism where it lives

36. Which one of the following plants shows a very close relationship with a species of moth, where none of the two can complete its life cycle without the other?
(1) Hydrilla (2) Yucca
(3) Banana (4) Viola

37. Which of the following flowers only once in its life-time ?
(1) Bamboo species (2) Jack fruit
(3) Mango (4) Papaya

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38. Natality refers to
(1) Death rate
(2) Birth rate
(3) Number of individuals leaving the habitat
(4) Number of individuals entering a habitat

39. In a growing population of a country
(1) pre-reproductive individuals are more than the reproductive individuals.
(2) reproductive individuals are less than the post-reproductive individuals.
(3) reproductive and pre-reproductive individuals are equal in number.
(4) pre-reproductive individuals are less than the reproductive individuals.

NEET-UG 2019 (Odisha)

40. Carnivorous animals - lions and leopards, occupy the same niche but lions predate mostly larger animals and leopards take smaller ones. This mechanism of competition is referred to as :-
(1) Character displacement
(2) Altruism
(3) Resource partitioning
(4) Competitive exclusion

41. Match Column-I with Column-II.

Column-I		Column-II	
(a)	Saprophyte	(i)	Symbiotic association of fungi with plant roots
(b)	Parasite	(ii)	Decomposition of dead organic materials
(C)	Lichens	(iii)	Living on living plants or animals
(d)	Mycorrhiza	(iv)	Symbiotic association of algae and fungi

Choose the correct answer from the options given below :

	(a)	(b)	(c)	(d)
(1)	(i)	(ii)	(iii)	(iv)
(2)	(iii)	(ii)	(i)	(iv)
(3)	(ii)	(i)	(iii)	(iv)
(4)	(ii)	(iii)	(iv)	(i)

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42. Between which among the following, the relationship is not an example of commensalism?
(1) Orchid and the tree on which it grows
(2) Cattle Egret and grazing cattle
(3) Sea Anemone and Clown fish
(4) Female wasp and fig species

NEET-UG 2020

43. Which of the following is not an attribute of a population?
(1) Species interaction (2) Sex ratio
(3) Natality (4) Mortality

44. Match the items in Column-I with those in Column-II :

Column I	Column II
(a) Herbivores-Plants	(i) Commensalism
(b) Mycorrhiza-Plants	(ii) Mutualism
(c) Sheep-Cattle	(iii) Predation
(d) Orchid-Tree	(iv) Competition

Select the correct option from following :
(1) (a)–(iv), (b)–(ii), (c)–(i), (d)–(iii)
(2) (a)–(iii), (b)–(ii), (c)–(iv), (d)–(i)
(3) (a)–(ii), (b)–(i), (c)–(iii), (d)–(iv)
(4) (a)–(i), (b)–(iii), (c)–(iv), (d)–(ii)

45. The impact of immigration on population density is :-
(1) Negative
(2) Both positive and negative
(3) Neutralized by natality
(4) Positive

AIPMT 2021

46. Inspite of interspecific competition in nature, which mechanism the competing species might have evolved for their survival?
(1) Resource partitioning
(2) Competitive release
(3) Mutualism
(4) Predation

47. Amensalism can be represented as :
(1) Species A (–); Species B (0)
(2) Species A (+); Species B (+)
(3) Species A (–); Species B (–)
(4) Species A (+); Species B (0)

48. In the exponential growth equation $N_t = N_0e^{rt}$, e represents:
(1) The base of number logarithms
(2) The base of exponential logarithms
(3) The base of natural logarithms
(4) The base of geometric logarithms

49. Match List-I with List-II.

	List-I		List-II
(a)	Allen's Rule	(i)	Kangaroo rat
(b)	Physiological adaptation	(ii)	Desert lizard
(c)	Behavioural adaptation	(iii)	Marine fish at depth
(d)	Biochemical Adaptation	(iv)	Polar seal

Choose the correct answer from the options given below.
(1) (a)-(iv), (b)-(ii), (c)-(iii), (d)-(i)
(2) (a)-(iv), (b)-(i), (c)-(iii), (d)-(ii)
(3) (a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)
(4) (a)-(iv), (b)-(iii), (c)-(ii), (d)-(i)

50. **Assertion (A) :** A person goes to high altitude and experiences 'altitude sickness' with symptoms like breathing difficulty and heart palpitations.
Reason (R) : Due to low atmospheric pressure at high altitude, the body does not get sufficient oxygen.
In the light of the above statements, choose the correct answer from the options given below.
(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(3) (A) is true but (R) is false
(4) (A) is false but (R) is true

51. If a pond has 40 lotus plants last year and through reproduction 8 new plants are added, taking the current population to 48, what will be the birth rate?
(1) 0.6 offspring per lotus per year
(2) 0.5 offspring per lotus per year
(3) 0.2 offspring per lotus per year
(4) 0.1 offspring per lotus per year

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NEET-UG 2022

52. Which one of the following statements cannot be connected to Predation ?
(1) It might lead to extinction of a species
(2) Both the interacting species are negatively impacted
(3) It is necessitated by nature to maintain the ecological balance
(4) It helps in maintaining species diversity in a community

53. While explaining interspecific interaction of population, (+) sign is assigned for beneficial interaction, (–) sign is assigned for detrimental interaction and (0) for neutral interaction. Which of the following interactions can be assigned (+) for one species and (–) for another species involved in the interaction ?
(1) Amensalism (2) Commensalism
(3) Competition (4) Predation

54. Two butterfly species are competing for the same nectar of a flower in a garden. To survive and coexist together, they may avoid competition in the same garden by:
(1) feeding at the same time
(2) choosing different foraging patterns
(3) increasing time spent on attacking each other
(4) predating on each other

55. The pioneer species in a hydrarch succession are :
(1) Free-floating angiosperms
(2) Submerged rooted plants
(3) Phytoplanktons
(4) Filamentous algae

56. The species that come to appear in bare area are called :
(1) Pioneer species
(2) Invasive species
(3) Competitive species
(4) Species of seral community

57. All successions irrespective of the habitat proceed to which type of climax community?
(1) Xeric (2) Mesic
(3) Hydrophytic (4) Edaphic

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EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	1	2	3	3	3	1	1	2	2	1	1	4	2	3	2
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	3	1	3	3	3	3	4	3	1	1	2	1	3	1	4
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	1	3	3	4	2	1	2	1	3	4	4	1	2	4
Question	46	47	48	49	50	51	52	53	54	55	56	57			
Answer	1	1	3	3	1	3	2	4	2	3	1	2			

SOLUTION

6. Species Div. $= \frac{\text{No. of species}}{\text{No. of habitats}}$

For a species Div. $= \frac{2.3+1.2+0.52+6+3.1+1.1+9+10.3}{11} = \frac{33.52}{11} = 3.04$

For b species Div. $= \frac{10.2+0.62+1.5+3+8.2+1.1+11.2}{11} = \frac{35.82}{11} = 3.25$

For c species Div. $= \frac{11.3+0.9+0.48+2.4+1.4+4.2+0.8+8.4+2.2+4.1}{13} = \frac{36.18}{13} = 2.78$

For d species Div. $= \frac{3.2+10.2+11.1+4.8+0.4+3.3+0.8+7.3+11.3+2.1}{12} = \frac{54.5}{12} = 4.5$

34. Given :

$N_0 = 100$, $N_t = ?$, $r = 0.5$, $t = 6$ yrs

$N_0 = N_t e^{rt}$

$= 100 \times 2.72^{(0.5 \times 6)}$

$= 100 \times 2.72^3$

$= 100 \times 20.12$

$N_t = 2012$

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Exercise - III Master Your Understanding

EXERCISE-III (A) NCERT BASED QUESTIONS

1. Select the statement which explains best parastism :-
(1) One organism is benefited
(2) Both the organism are benefited
(3) One organism is benefited, other is not affected
(4) One organism is benefited, other is affected

2. The role of an organism in the ecological system is known as
(1) Habitat
(2) Herbivory
(3) Niche
(4) Interaction

3. Select the statement which best explains commensalism :-
(1) One organism is benefited
(2) Both the organisms are benefited
(3) One organism is benefitted, other is not affected
(4) One organism is benefitted, other is affected.

4. Community is defined as aggregation of :-
(1) Individuals of the same kind
(2) Individuals of same species
(3) Individuals of a population
(4) Populations of different species.

5. Parasite can be explained as an organism which depends on others :-
(1) For food
(2) For shelter
(3) For both food and shelter
(4) For Reproduction

6. An orchid plant growing on the branch of mango tree, what is the interaction between orchid & mango ?
(1) Parasitism
(2) Commensalism
(3) Protocoperation
(4) Mutualism

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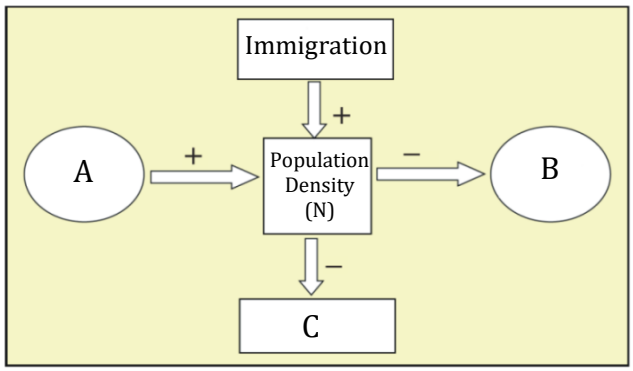
7. Mark the important defence mechanism in plants against herbivory :-
(1) Spines (2) Toxic Chemical
(3) Both (1) & (2) (4) None of these

8. Species A (–) & Species B(o) shows the following Interaction :-
(1) Amensalism (2) Predation
(3) Mutualism (4) Competition

9. The age pyramid with broad base indicates:-
(1) High percentage of young individuals
(2) Low percentage of young individuals
(3) High percentage of old individuals
(4) Low percentage of old individuals

10. In a decline population of a country :-
(1) Number of pre reproductive is more than reproductive.
(2) Number of pre reproductive is less than reproductive.
(3) Number of pre reproductive is equal to reproductive.
(4) Reproductive are less than post reproductive.

11. In the diagram given above, which of the following option correctly represents A, B and C.



(1) A = Death rate, B = Birth rate, C = Emigration
(2) A = Birth rate, B = Death rate, C = Emigration
(3) A = Emigration, B = Death rate, C = Birth rate
(4) A = Death rate, B = Emigration, C = Birth rate

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12. Which of the following equation is/are correct for the population density (N) at time t + 1 ?
N = Density at time 't'
B = Natality
D = Mortality
I = Immigration
E = Emigration
(A) N = N + [(B + I) – (D + E)]
(B) N = N + [(B – D) + (I – E)]
(C) N = N + [(B + I) + (D + E)]
(D) N = N – [(B – D) + (I – E)]
(1) Only A
(2) Only A and B
(3) Only C
(4) A, B, C and D

13. In a population there are higher number of prereproductive individuals, moderate number of reproductive individuals and less post reproductive individuals are present. This type of population represents:-
(1) Population of developed countries
(2) Population of developing country
(3) Stable growth
(4) Declining population

14. In a new habitat which is just being colonised which will play significant role in population growth :-
(1) Birth rate
(2) Emigration
(3) Migration
(4) Immigration

EXERCISE-III (B) (ANALYTICAL QUESTIONS)

15. Lichens can be used as :-
(1) Bio-indicator for air pollution
(2) Initial vegetation for waste lands.
(3) Source of wood.
(4) To check the air pollution.

16. What will happen if the number of organism increased at a place:-
(1) Inter species competition
(2) Intra species competition
(3) Both
(4) None

17. Two different species can not live for long duration in the same niche or habitat. This law is:
(1) Allen's law
(2) Bergman's ruls
(3) Competitive exclusion principal
(4) Weiseman's theory

18. Which of the following is a correct pair :
(1) *Cuscuta* - parasite
(2) *Dischidia* - insectivorous
(3) *Opuntia* - predator
(4) *Capsella* - hydrophyte

19. July 11 is observed as :-
(1) World Population Day
(2) No Tobacco Day
(3) World Environment Day
(4) World Health Day

20. Which one of the following correctly represents an organism and its ecological niche ?
(1) ***Vallisneria*** and pond
(2) Desert locust ***(Schistocerca)*** and desert
(3) Plant lice (aphids) and leaf
(4) Vultures and dense forest

21. In a population birth rate is 0.15 and death rate is 0.08 during a unit time period. What is the value of r (intrinsic rate of natural increase) for given population ?
(1) 0.23
(2) 0.07
(3) 0.05
(4) 0.25

22. A population has more young individuals, compared to older individuals. What would be the status of the population after some years:
(1) It will decline
(2) It will stabilize
(3) It will first decline and then stabilize
(4) It will increase

TG: @Chalnaayaaar

23. In a month of January Siberian cranes migrate from Russia to India for breeding, a survey was done
Till December total population of Siberian cranes = 1200
Birth rate = 400
Mortality rate = 200
Number of cranes immigrated = 600
Number of cranes emigrated = 300
Calculate the total population
(1) 1500 (2) 1000
(3) 2000 (4) 1700

24. If a population of 50 Paramoecium present in a pool increase to 150 after an hour, what would be the growth rate of population ?
(1) 50 per hours
(2) 200 per hour
(3) 5 per hour
(4) 100 per hour

25. Lichens are well known combination of an alga and a fungus where fungus has :
(1) An epiphytic relationship with the alga
(2) A parasitic relationship with the alga
(3) A symbiotic relationship with the alga
(4) A saprophytic relationship with the alga

26. Which one of the following is a matching pair of certain organism(s) and the kind of association
(1) Shark and sucker fish- commensalism
(2) Algae and fungi in lichens-mutualism
(3) Orchids growing on trees-parasitism
(4) ***Cuscuta*** (dodder) growing on other flowering plants-predation

27. The Great Barrier Reef along the east coast of Australia can be categorized as
(1) Population (2) Community
(3) Ecosystem (4) Biome

EXERCISE - III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	3	3	4	3	2	3	1	1	2	2	2	2	4	1
Question	16	17	18	19	20	21	22	23	24	25	26	27			
Answer	3	3	1	1	1	2	4	4	4	3	1	3			

SOLUTION

21. b = 0.15 ,
d = 0.08
r = (b – d)
r = 0.15 – 0.08
r = 0.07

23. N_t = 1200 , I = 600
B = 400 , E = 300
D = 200 , $N_{(t+1)}$ = ?
$N_{(t+1)} = N_t = [(B+I) - (D+E)]$
= 1200 + [(400 + 600) – (200 + 300)]
= 1200 + [1000 – 500]
$N_{(t+1)}$ = 1200 + 500 = 1700